

Epidural Analgesia and Lactation

Epidural Analjezi ve Laktasyon

Mert Akbas¹, A. Baris Akcan²

¹Department of Anesthesiology, Division of Algology, Faculty of Medicine, Akdeniz University, Antalya, Turkey

²Department of Pediatrics, Faculty of Medicine, Akdeniz University, Antalya, Turkey

Abstract

Present-day mothers have an increased desire to breastfeed, but this desire has increased in parallel with the increased use of epidural analgesia during labor. Epidural anesthesia requires a high level of technical proficiency to avoid serious complications and should always be performed by a trained anesthetist using a strict aseptic technique to reduce the risk of infection. There is currently no consensus regarding the relationship between breastfeeding and epidural analgesia during labor. The purpose of this review was to evaluate the effect of epidural analgesia on breastfeeding.

Key Words: Breastfeeding, Epidural analgesia, Labor

Özet

Günümüzde annelerin bebeklerini anne sütüyle besleme istekleri giderek artmaktadır. Fakat aynı zamanda doğum eylemi sırasında epidural analjezi kullanımı da artmaktadır. Epidural anestezi uygulamaları ciddi komplikasyonlardan kaçınabilmek için yüksek teknik yeterlilik gerektirir, enfeksiyon riskinden kaçınmak için mutlak aseptik tekniklere dikkat ederek deneyimli bir anestezi uzmanı tarafından uygulanmalıdır. Doğumda epidural analjezi kullanımı ve emzirme konusunda ortak bir görüş yoktur. Bu derlemenin amacı epidural analjezinin emzirme üzerine etkisini değerlendirmektir.

Anahtar Kelimeler: Doğum, Emzirme, Epidural analjezi

Introduction

Labor pain is one of the most severe types of pain. Many methods have been utilized with the aim of achieving painless labor. The selection of a particular analgesic application depends on the mother's wishes, the obstetrician's and anesthesia specialist's decisions, and the progression of labor and birth [1-3].

Epidural analgesia (EA) was introduced in Swedish labor wards in the mid-1970s. EA consists of a combination of regional anesthetic agents (e.g., bupivacaine and lidocaine) and narcotic agents (e.g., fentanyl and sufentanil) [4]. EA aids in the treatment of labor pain and helps the mother to remain awake and cooperative during the birth. EA or combined spinal-epidural analgesia was administered to 16% of US parturients in 1981. This rate increased to 33% by 1992, and this increasing trend has continued to the present day [5, 6].

The epidural region is located between the ligamentum flavum and dura mater, above the foramen magnum, below the sacrococcygeal membrane, and behind the ligamentum flavum. The term epidural is short for epidural anesthesia, a form of regional anesthesia involving the injection of drugs through a catheter that is placed into the epidural space.

The injection can cause both a loss of sensation (anesthesia) and a loss of pain (analgesia) by blocking the transmission of signals through the nerves in or near the spinal cord. Epidural anesthesia requires a high level of technical proficiency to avoid serious complications and should always be performed by a trained anesthetist using a strict aseptic technique to reduce the risk of infection. At the time of placement of the epidural analgesia, emergency equipment must be immediately available to treat serious negative reactions. These reactions can include hypotension, respiratory compromise, and, in rare cases, seizures and cardiac arrest. Precautions that need to be taken to prevent infection include the removal of jewelry, careful hand washing, the use of a fresh face mask, and disinfection of the patient's back with 2% chlorhexidine in alcohol [7].

The anesthetist palpates the patient's back and identifies a suitable anatomical gap between the bony spinous processes prior to the procedure. The spinal location at which the catheter should be placed depends mainly on the site and the type of intended operation or the anatomical origin of pain. Most commonly, the anesthetist conducting an epidural places the catheter in the mid-lumbar or lower back region of the spine (L3-L4 or L4-L5 space) [2, 8-10]. The epidural space

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Correspondence to: A. Baris Akcan, Department of Pediatrics, Faculty of Medicine, Akdeniz University, 07070 Antalya, Turkey

Phone: +90 242 249 65 20 e-mail: barisakc@hotmail.com, barisakc@gmail.com

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is located with the use of the "loss of resistance" technique. An epidural needle that is attached to a syringe of air or saline is advanced slowly through spinal ligaments as pressure is applied to the syringe plunger. Resistance to plunger pressure is lost upon entry into the epidural space [11].

Maternal indications for EA include painless birth, maternal risks, hypertension, and multiple pregnancy. Fetal indications for EA include prematurity, intrauterine growth restriction (IUGR), intrauterine fetal loss or anomaly, back labor, placental insufficiency, and irregular uterine contractions [1, 2].

Epidural analgesia is contraindicated in the presence of actual or anticipated serious maternal hemorrhage, refractory maternal hypotension, coagulopathy or anticoagulant medication (e.g., warfarin), untreated bacteremia, increased intracranial pressure, skin or soft tissue infection at the site of the epidural or spinal placement, and anticoagulant therapy [2, 7, 11].

In addition, epidural analgesia is contraindicated in cases of patient refusal or inadequate practitioner training and experience.

A pre-existing neurological defect (e.g., progressive multiple sclerosis) may be a reason to avoid regional techniques; other maternal conditions, such as aortic stenosis, pulmonary hypertension, right-to-left shunts, increased intracranial pressure, and lack of cooperation, are also relative contraindications to the use of epidural analgesia [12].

Breastfeeding

Biologically, the pregnancy and lactation periods are continuations of each other. Nutrients, growth-regulating substances, and substances to protect against infection pass through the placenta to the fetus during pregnancy. After birth, these placental functions can be fulfilled through nutrition. The first few years after birth are an extremely important period. In this critical period, certain biological and psychosocial needs must be met to ensure the survival and healthy development of a child.

Breast milk contains nutrients in the appropriate quantity and quality to meet the baby's needs. Breast milk alone meets the baby's physiological and psychosocial needs for the first six months of life.

Breast milk provides the appropriate amounts of nutrients according to each child's needs, and it contains high-quality, biologically useful compounds [13-15]. Babies feeding on breast milk have fewer infections (e.g., otitis media, diarrhea, respiratory system infections, meningitis, and urinary infections), allergies, cases of sudden infant death, esophageal and stomach lesions, and necrotizing enterocolitis [15-20]. Cognitive development, antibody responses to routine vaccinations and visual acuity development are also improved by breast milk [15-23].

Adults who received breast milk for a sufficient period of time at an early age had decreased risks of developing lymphomas, leukemia, multiple sclerosis, diabetes mellitus, chronic liver disease, ulcerative colitis, obesity, Crohn's disease, celiac disease, and malocclusion in the mouth [15, 24].

Breastfeeding strengthens the immune system, especially in the gastrointestinal and respiratory systems. Children who are fed breast milk experience fewer hospital admissions and decreased durations of illnesses [15, 17, 25].

Breastfeeding also confers benefits to maternal health. The baby's sucking activity causes the secretion of oxytocin, provides to take the form of contractions of the uterus before birth. Lactational amenorrhea decreases iron loss. Lactation reduces the risk of postpartum hemorrhage, makes it easier to return to pre-pregnancy weight, increases bone remineralization, reduces the possibility of osteoporosis and reduces the risks of developing breast, ovarian and uterine cancers premenopausally [15, 26-29].

Many factors affect breastfeeding, such as the labor type, the administration of general or regional anesthesia during birth, previous births, multiple pregnancy, and bottle-feeding the baby. Breastfeeding problems can be caused by the baby (palate structure, not sucking well) or the mother (flat or sunken nipples, education problems).

For the first 6 months, breastfeeding alone will suffice for the child's nutritional needs, and it should then be combined with food until the age of one year or even longer. The hospital should adopt breastfeeding as a policy that is well supported (e.g., baby-friendly hospitals) [30-33].

Neuraxial Analgesia During Labor

The use of regional anesthesia has become increasingly popular for labor analgesia; however, its effect on breastfeeding has been unclear. Epidural drugs are the most important concern. Opioids cross the placenta and decrease neurobehavioral scores, which may impact breastfeeding. Numerous studies have been performed, but most have been retrospective observational studies. There have been very few randomized or prospective trials.

Halpern et al. [26] prospectively enrolled 189 women who delivered at a hospital. A total of 59% of the women received epidural analgesia. At 6 weeks postpartum, 72% of the women breastfed fully, and 20% breastfed partially. After controlling for demographic characteristics and delivery mode, there was no correlation between breastfeeding success at 6 weeks and the labor analgesic method used. Albani et al. [34] correlated the feeding method at hospital discharge with the analgesic method used in 2275 women. Women who delivered vaginally with and without epidural analgesia did not differ in their breastfeeding rate (96-98%). Regional anesthesia for Cesarean delivery was associated with a higher degree of breastfeed-

ing than was general anesthesia (95%-86%). Nissen et al. [35] administered 100 mg meperidine IM to 13 healthy primiparae during labor who delivered 1-5 hours or 8-10 hours later. The infants in the first group had depressed sucking behavior during 15-45 min of observation and a delayed initiation of lip and mouth movements, compared with the infants in the second group. The infants who did not suck had higher plasma meperidine levels at birth than did the infants who sucked. Matthews [36] evaluated breastfeeding initiation in women receiving or not receiving the opioid alphaprodine. Their findings suggested that even small doses of the narcotic analgesic alphaprodine, when administered 1-3 hours prior to delivery, can delay effective feeding by several hours or, in some cases, by days. Rajan [37] correlated breastfeeding success at 6 weeks with the analgesic method used. Meperidine use was associated with decreased success, whereas lidocaine use was associated with increased success. The survey did not differentiate between lidocaine used for peripheral nerve block and lidocaine used for epidural nerve block.

Righard and Alade [38] compared the initial sucking technique between infants. In the separation group (n=34), the infant was placed on the mother's abdomen immediately after birth but was removed after approximately 20 min for measuring and dressing. In the contact group (n=38), contact between the mother and the infant was uninterrupted for at least 1 h. After approximately 20 min, the infants began to make crawling movements toward the breast. The rooting reflex soon came into play, and at an average of 50 min after birth, most infants were sucking at the breast. More infants had the correct sucking technique in the contact group than in the separation group (24/38 vs. 7/34). A total of 40 out of 72 mothers (56%) had received pethidine during labor. The infants were also sedated, and most (25/40) did not suck at all. It is suggested that contact between the mother and the infant should be uninterrupted during the first hour after birth or until the first breastfeeding session has been accomplished and that the use of drugs, such as pethidine, should be restricted.

Perez-Escamilla et al. [39] performed a meta-analysis of studies that correlated maternity ward practices with lactation success. The meta-analysis indicated that commercial discharge packs had an adverse effect on lactation performance. Rooming-in and breastfeeding guidance in a rooming-in context had beneficial impacts on breastfeeding among primiparae. Breastfeeding on demand was positively associated with lactation success. Torvaldsen et al. [40] reported a study on 1280 women giving birth to singletons in Australia in 1997. The authors concluded that breastfeeding success was much lower in women who underwent epidurals during labor. Press through a lot of this work has been known. Later in the scientific literature has been criticized. William

Camann summarized the limitations of the Torvaldsen study. First, the title of the article was criticized: it is a retrospective trial and a secondary analysis and not a prospective, randomized study. Second, no patient charts were examined, and the wrong type of anesthesia had been recorded. In addition, the correlation between the delivery type and the analgesia type was not taken into consideration. The authors also failed to describe the exact epidural solutions used and relied on a personal communication with one anesthetist to conclude that all patients received similar solutions [41].

The adverse neonatal effects of pethidine and norpethidine are well known to the scientific community. Beilin et al. [42] performed a prospective, randomized, double-blind study to determine whether fentanyl, when administered as part of labor epidural analgesia, has an impact on breastfeeding. Women who previously breastfed a child and who requested labor epidural analgesia were randomly assigned in a double-blind manner to one of three groups: (1) no fentanyl group, (2) intermediate-dose fentanyl group (intent to administer between 1 and 150 µg epidural fentanyl) or (3) high-dose epidural fentanyl group (intent to administer >150 µg epidural fentanyl). On postpartum day 1, the women who were randomly assigned to receive high-dose fentanyl reported difficulties with breastfeeding (n=12, 21%) more frequently than did women who were randomly assigned to receive an intermediate dose of fentanyl (n=6, 10%) or no fentanyl (n=6, 10%), although this difference did not reach statistical significance (p=0.09). There was also no significant difference among groups in breastfeeding difficulty based on the lactation consultant's evaluation (40% difficulty in each group; p=1.0). Neurobehavioral scores were lowest in the infants of women who were randomly assigned to receive more than 150 µg fentanyl (p=0.03). At 6 weeks postpartum, more women who were randomly assigned to high-dose epidural fentanyl were not breastfeeding (n=10, 17%), compared with women who were randomly assigned to receive either an intermediate fentanyl dose (n=3, 5%) or no fentanyl (n=1, 2%) (p=0.005). To conclude, among women who had previously breastfed, those who were randomly assigned to receive high-dose labor epidural fentanyl were more likely to have stopped breastfeeding 6 weeks postpartum than were women who were randomly assigned to receive a lower dose of fentanyl or no fentanyl. Halpern and Ioscovich [43], in an accompanying editorial, correctly asked for a careful analysis of the Beilin findings. Halpern et al. showed in 1999 that labor analgesia has no influence on breastfeeding success, provided hospital policies support and promote breastfeeding. Postpartum lactation support is critical to ensure breastfeeding success [44].

In 2010, Wilson et al. [45] compared breastfeeding initiation and duration in 1054 nulliparae who were randomized

to receive bupivacaine control epidural, combined spinal epidural or low-dose infusion and 351 matched, non-epidural control subjects. This study was the first randomized controlled trial to conclusively refute a negative effect of the inclusion of fentanyl in epidural solutions, and the findings of this study do not support the hypothesis that epidural analgesia has an effect on breastfeeding initiation.

In conclusion, breastfeeding is a multifactorial, complex phenomenon. Epidural analgesia is one of these factors. Intrapartum maternal opioid administration, especially meperidine (pethidine, Demerol) administration, decreases breastfeeding success [35-38]. Evidence shows that good postpartum lactation support is critical for breastfeeding success [44, 46]. Delivery room and postpartum practices that support breastfeeding (immediate postpartum maternal-infant contact, rooming-in, breastfeeding on demand) seem to be the most important influences on breastfeeding success [39]. At the moment, there is no prospective, randomized evidence that epidural analgesia causes reduced breastfeeding success. Retrospective studies showed an association but failed to demonstrate causation.

At hospitals with policies that minimize early maternal-infant separation, when analgesia is required, epidural labor analgesia is the best form of analgesia available, because it has minimal effects on the newborn and lactation success [43, 46, 47].

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